

## ABSTRACT

A method for sequentially detecting multiple target nucleic acid fragments in a sample includes steps of adding a sample into a column having a test snare which has thereon multiple single strand capture DNA sequences; wherein each capture sequence binds specifically with one target nucleic acid fragment, and forms a double strand segment; washing out unbound target nucleic acid fragment; adding a first DNA probe, which has thereon a chemical label, to attach specifically to a probe binding site of the first target nucleic acid fragment; washing out unbound first probe; adding a triggering solution to trigger the chemical label; and detecting signals on the test snare for determining the first target nucleic acid fragment; subsequently, adding a second DNA probe to bind specifically to the second target nucleic acid fragment; washing, triggering and detecting signals for determining the second target nucleic acid fragment in the same manner.

15